

EXPERIMENT # 8
REPORT FORM

<u>No.</u>	<u>Evidence of Reaction</u>	<u>Equations</u> I. Overall Equation II. Total Ionic Equation III. Net Ionic Equation IV. Oxidation Half-reaction V. Reduction Half-reaction
1.		I. $\text{Cu (s)} + \text{AgNO}_3 \text{ (aq)} \rightarrow$ II. III. IV. V.
2.		I. $\text{Pb (s)} + \text{Cu(NO}_3)_2 \text{ (aq)} \rightarrow$ II. III. IV. V.
3.		I. $\text{Zn (s)} + \text{Pb(NO}_3)_2 \text{ (aq)} \rightarrow$ II. III. IV. V.

No.	<u>Evidence of Reaction</u>	<u>Equations</u> VI. Overall Equation VII. Total Ionic Equation VIII. Net Ionic Equation IX. Oxidation Half-reaction X. Reduction Half-reaction
4.		I. $\text{Zn (s)} + \text{MgSO}_4 \text{ (aq)} \rightarrow$ II. III. IV. V.
5.		I. $\text{Cu (s)} + \text{H}_2\text{SO}_4 \text{ (aq)} \rightarrow$ II. III. IV. V.
6.		I. $\text{Zn (s)} + \text{H}_2\text{SO}_4 \text{ (aq)} \rightarrow$ II. III. IV. V.

QUESTIONS:

1. Complete the following table by writing the symbols of the two elements being compared in each test:

REACTION NUMBER

	1	2	3	4	5	6
GREATER ACTIVITY						
LESSER ACTIVITY						
ELEMENT OXIDIZED						
ELEMENT REDUCED						
# OF ELECTRONS INVOLVED						
OXIDIZING AGENT						
REDUCING AGENT						

2. Arrange Pb, Mg, and Zn in order of their activities, listing the most active first:

(1) _____ (2) _____ (3) _____

3. Arrange Cu, Ag, and Zn in order of their activities, listing the most active first:

(1) _____ (2) _____ (3) _____

4. Arrange Mg, H, and Ag in order of their activities, listing the most active first:

(1) _____ (2) _____ (3) _____

5. Arrange all five of the metals (exclude hydrogen) in an activity series, list the most active first:

(1) _____ (2) _____ (3) _____ (4) _____ (5) _____

6. On the basis of the reactions observed in the six trials, explain why the position of hydrogen cannot be fixed exactly with respect to all of the other elements listed in Question 5?

7. Arrange Pb, Ag and Mg in order of ease of oxidation, listing the most easily oxidized first:

8. Arrange Zn, Cu and H in order of strength as reducing agents, listing the strongest reducing agent first:

9. What additional test, or test, would be needed to establish the exact position of hydrogen among the metals listed in Question 5? Explain how you would interpret the results of the suggested test(s)?

10. On the basis of the evidence developed in this experiment:

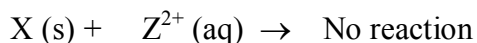
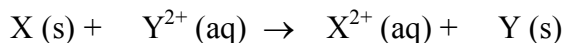
(a) Would metallic silver react with dilute sulfuric acid? _____

Why or why not?

(b) Would metallic magnesium react with dilute sulfuric acid? _____

Why or why not?

11. Three hypothetical metals all form 2+ cations and will be designated as X, Y, and Z. A series of experiments are carried out on these metals and solutions of ions. The results are summarized by the equations given below:



Arrange X, Y, and Z in order of activities, listing the most active first:

(1) _____ (2) _____ (3) _____